

Bignami, in approaching the subject anew, sought to obtain indirect proof of the mosquito inoculation theory by protecting a certain number of individuals from mosquito bites by the use of netting, etc., and to expose a corresponding number to the ravages of the mosquito. If the protected persons remained free from malaria and a certain number of the unprotected developed the disease, this would afford indirect proof on the side of the inoculation theory. This experiment, however, had to be given up, owing to the difficulties encountered in carrying it out.

He then determined to resort to the direct method of investigation by endeavoring to show that patients bitten by mosquitoes obtained from a highly malarious district acquire the disease. In order to fortify any positive results he might obtain it was necessary that certain conditions should be secured. The experiment should be carried out in an environment known to be non-malarious; the individual experimented upon must not have had malaria, and must have lived in a hospital under medical supervision for as long a time as possible; and the experiment should be conducted for several weeks, during which time frequent renewals of mosquitoes must be made.

These conditions were all present in the case in which the experiments were successful; in fact, the patient, a nervous case, had never been outside of the wards of the Santo Spirito Hospital in Rome for six years, during which time he had been under Bastianelli's care. Grassi had shown that malarious districts are infested with a certain species of mosquitoes never found elsewhere. During the experiment, which began on September 26th, a competent person collected three species of adult mosquitoes daily from pools in highly malarious regions of the Roman Campagna. Thus there was a supply of adult mosquitoes placed in the "mosquito-room" in which the patient slept each night. He was severely and frequently bitten. On October 1st his temperature became elevated, and he had marked chilly feelings. These persisted during October 2d, and he was given quinine subcutaneously in the afternoon. On October 3d, about forty hours after the onset of the fever, a blood examination revealed young amœboid hyaline intracellular malarial parasites. Later in the day parasites were found containing pigment and presenting the characteristic features of æstivo-autumnal parasites.

Bignami thinks that this experiment affords, for the first time, practically absolute proof that malarial infections are conveyed by the bites of mosquitoes.

As to the species of mosquito that conveyed the infection, Bignami thinks that either the *Culex penicillaris* or the *Culex malaria* (Grassi) were the most likely ones. These, with the *Anopheles claviger*, are believed by Grassi to be found only in malarious districts.

Finally, Bignami states that malaria is a disease which is contracted by inoculation—a fact of which we have now the first experimental proof. He claims, further, that everything points to the conclusion that inoculation is the only way by which infection is acquired, since air and water as carriers of infection may be excluded, and because arguments based on analogy all tend in the same direction. This much at any rate we can assert, namely, that inoculation is the only mechanism of infection which has been demonstrated experimentally.

On the Structure of the Semilunar and Flagellate Bodies of Malarial Fever.—BIGNAMI and BASTIANELLI (*The Lancet*, December 19, 1898), in reporting the results of their study of the structure of flagellated malarial parasites, refer to Manson's view that they represent parasites in sporulation, the spores of which, "in the interests of the extra-corporeal life of the plasmodium," take on this special form of mobile and flagellated filaments. Grassi and Feletti had previously advanced the opinion that they represented nothing but the dying forms of the parasite, and pointed out that no one had hitherto demonstrated in these filaments the structure which ought to be found in spores, namely, chromatin. Sacharoff, subsequently, in studying the internal structure of the flagellates of crows, considered the flagella as chromosomes originating in the nuclei of the body of the parasite, and flagellation as a process of perverted karyokinetic division accomplished in a violent manner.

During the summer of 1898 Bignami and Bastianelli investigated the structure of the crescents and their derivative flagellate bodies, and the flagellates derived from the tertian organism. For this purpose they used the Romanowski method of staining. As a result of their study they found that in the majority of flagellates the flagella consist essentially of a filament of chromatin well brought out by the Romanowski method. The flagellates derived from the crescents and pigmented tertian bodies do not all present the same details of structure. A moderate number present the appearance of a protoplasmic body containing in its mass some filaments or blocks of pigment. From the protoplasmic bodies of these forms there usually project four flagella, apparently entirely made up of protoplasm and containing no chromatin. Then there are other flagellate bodies—and these are more numerous—which possess a pigmented protoplasmic body in which the particles of chromatin have emigrated to the periphery. From these peripheral chromosomes issue filaments of chromatin which form the principal part of the flagella. This form generally has four flagella as well. Finally, there are a few flagellates, some flagella of which contain chromatin, while others consist of protoplasm alone. In the rare instances in which they were able to find an isolated stained flagellum it always appeared as though the chromatin occupied the centre and was covered by a peripheral layer of protoplasm. The chromatin in these flagella was quite definitely shown to be derived from the nuclei of the parasites. Bignami and Bastianelli do not mention the importance of the presence of chromatin in the flagella and its bearing on the fertilization process observed by MacCullum to take place in human and avian malarial parasites. They hold that the crescents are sterile bodies in man and as far as man is concerned. Further, they had previously forwarded the hypothesis that the crescents represent those phases of the life of the malarial parasite which in other parasites are continued and completed outside the host. This hypothesis had received confirmation, from the observation of Ross, Grassi, and themselves, that the crescents do actually develop in the middle intestine of the mosquito (*Anopheles claviger*).

Hypertrophic Cirrhosis of the Liver, with Enlarged Spleen and Icterus, in Three Children of the Same Parents.—HASENCLEVER (*Berliner klin.*

Woch., 1898, No. 45) reports an interesting observation. The father had no history of syphilis, but had apoplexy when thirty-two years old. The liver disease appeared in the children at the ages of eighteen, twenty, and sixteen years. All had chronic enlargement of the liver, constant and intense jaundice, early appearance of enlarged spleen, and no evidences of portal congestion. The disease came on with remissions and exacerbations. The three patients showed very defective growth as compared with a healthy brother and sister of nearly the same ages, and a sister of four years. There had also been one abortion and three early deaths in the family. The patient first attacked died after a profuse gastric and intestinal hemorrhage. There was no ascites. The enlarged liver showed no scars, but was hob-nailed. There were no peritoneal adhesions. Microscopical examinations showed thickening of the capsule and an interacinous growth of connective tissue of somewhat irregular distribution, with hypertrophy and atrophy of the liver-cells, and but little new growth of the biliary ducts. The bile capillaries contained fine granular concretions and the liver cells much yellow and brown pigment. The author discusses the various etiological possibilities, leaning, with evident justice, to the theory of inherited syphilis. He suggests that the faulty development of the patients was due to inherited syphilitic disease of the liver, which latter ultimately showed itself as hypertrophic cirrhosis.

Hysterical Paroxysmal Œdema.—EDGEWORTH (*Bristol Medico-chirurgical Journal*, September, 1898, p. 206) reports three cases of paroxysmal localized œdema.

The first case was a man, aged twenty-four years, who gave the history that he would go to bed quite well, and awake in the morning to find that some part of the body, the foot or leg, arm or hand, often the face, and rarely the trunk, had become markedly swollen. This would last all day, and gradually subside. There was a burning, itching pain in the slightly red, swollen part, which could not be indented by the finger. There was no anæsthesia, analgesia, or thermo-anæsthesia of the skin in either the affected or the normal parts. The patient was observed in several repeated attacks. In one attack the lips and the left side of the face were involved. There was no family history of any similar affection. The case was treated by arsenic in increasing doses, and the attacks became less acute and occurred only at greater intervals.

In reviewing the distribution of the areas of œdema in this case, Edgeworth decides that they were very similar to the alterations in sensibility in some cases of hysteria. The case was considered one of vasomotor neurosis, of cerebral and probably cortical origin.

A second case, a man, aged twenty-two years, had during twelve months been troubled with localized swellings of the hands, or hands and forearms, or feet. These would last twenty-four hours and then subside. In one of the attacks in which one of the hands and forearms were involved, the affected area corresponded accurately with that covered by a high-buttoned glove. In this attack the skin affected by the œdema, and for some distance above it, was partially anæsthetic to touch and to heat and cold, and totally analgesic to the prick of a pin.

In this case the fact that the area of the disturbance of sensation was not

limited to the area of œdema alone suggested strongly that the condition was of an hysterical nature.

The third case was that of a woman, aged thirty-seven years, who would be awakened between 2 and 3 A.M. by a numb pain in the left arm, and find that the arm from the shoulder downward was slightly hot, not red, but felt heavy. She would fall asleep again, and by morning the swelling would almost entirely have disappeared. In this case there were almost complete analgesia and thermo-anæsthesia, while tactile sensibility was normal.

Sydenham first described an hysterical œdema. It is rarely an isolated phenomenon, generally coexisting with arthralgia, paralysis, or contracture. While its duration is variable, it is usually a most persistent phenomenon, and may last for years.

The cases reported by Edgeworth differ from these, more especially in their paroxysmal type, though otherwise they are similar. During recent years a disease has been differentiated, to which various names have been given: angio-neurotic œdema, paroxysmal œdema, vasomotor œdema, and Quincke's œdema. The disease has been well described by Osler. It is characterized by local œdematous swellings, more or less limited in extent, and of transient duration. Severe colic is frequently associated with each attack. There is often a marked hereditary disposition; in one instance the disease was traced through five generations in one family. Its pathology is quite unknown, though Quincke and most observers consider it to be a vasomotor neurosis.

Edgeworth claims that his cases do not exactly conform to the descriptions of angio-neurotic or Quincke's œdema. He thinks that hysteria was an important etiological factor in the cases he reports. In the matter of treatment, arsenic in large doses is worthy of trial, and in one of Edgeworth's cases appeared to cure an affection which had lasted eleven years.

Phlegmasia Alba Dolens in Pneumonia.—J. M. DA COSTA (*Philadelphia Medical Journal*, September 10, 1898) has called attention to this rare complication of pneumonia. He has had three cases under observation, and has collected six from the literature. Of the nine, five were on the left side, two on the right, and two, Dr. Da Costa's recent cases, were bilateral. The prognosis is favorable, though the recovery may be tedious. John T. Metcalfe many years ago reported a fatal case. The usual seat of the lesion is in the internal saphenous or in the femoral vein, or in both.

Glycosuria and Gallstone-Colic.—ZINN (*Cent. f. innere Medicin*, September 24, 1898) refers to the fact that glycosuria has frequently been found by some clinicians in cases of cholelithiasis, whereas other observers have never found it. Exner examined the urines of forty cases of cholelithiasis in the surgical clinic at Heidelberg and found sugar present in every case but one. From this experience he considered the presence of sugar in the urine in doubtful cases of cholelithiasis of some diagnostic importance. All the cases were operated on, and the sugar always disappeared three to four weeks afterward. Zinn's results, from the examination of the urine in eighty-nine cases of cholelithiasis in Gerhardt's clinic in Berlin, showed glycosuria in only two instances. In both the presence of the sugar was only transitory.